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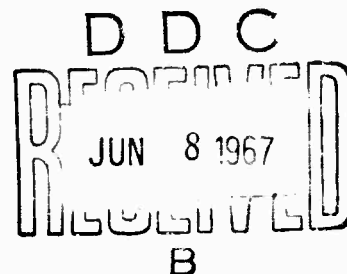
MONTHLY
MICROCLIMATIC SUMMARY

SEPTEMBER 1966

ENVIRONMENTAL DATA BASE
FOR REGIONAL STUDIES IN THE HUMID TROPICS

USATECOM Project No. 9-4-0013-01

US ARMY
TROPIC TEST CENTER
Fort Clayton, Canal Zone



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ENVIRONMENTAL DATA BASE
FOR REGIONAL STUDIES IN THE HUMID TROPICS

MONTHLY
MICROCLIMATIC SUMMARY

SEPTEMBER 1966

Prepared by

Michael A. Fradel, Project Officer
and
Dr. Wilfried H. Portig, Meteorologist

USATECOM Project No. 9-4-0013-01

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MONTHLY MICROCLIMATIC SUMMARY

Introduction

Monthly microclimatic data summarized in this series of reports were collected by the US Army Tropic Test Center and the Weather Engineers of Panama Corporation under the project, Environmental Data Base for Regional Studies in the Humid Tropics. The project is sponsored by the Advanced Research Projects Agency of the Department of Defense and by the Army Research Office, Office of the Chief of Research and Development. It is an investigation of microclimatic, air chemistry, vegetation, soils, microbiological, and macrofaunal conditions at selected sites in the principal tropical environments of the Panama Canal Zone and the Rio Hato Military Reservation. The objective of the project is to assemble quantitative environmental data for RDT&E purposes.

Sites. Data summarized in this report were collected principally at the Albrook Forest and Chiva Chiva sites. Supplementary data were collected at four satellite sites. Figure 1 shows the site locations within the Isthmus of Panama. Geographic coordinates are shown below:

Albrook Forest	09° 01'N, 79° 33'W
Chiva Chiva	09° 01'N, 79° 35'W
Rio Hato (satellite)	08° 24'N, 80° 06'W
Fort Kobbe (satellite)	08° 54'N, 79° 34'W
Fort Sherman (satellite)	09° 16'N, 79° 59'W
Albrook (satellite)	09° 00'N, 79° 33'W

The Chiva Chiva open site and the Albrook Forest site are paired for comparative study of environmental conditions in a tropical semideciduous forest and in a large clearing. Both are located in a region where the annual precipitation is approximately 80 inches and there is a pronounced dry season. The Rio Hato satellite site is located in an appreciably drier area (approximately 40 inches annually). The other satellite sites were located primarily for soil studies purposes. The Fort Sherman site receives much higher precipitation, with a less pronounced dry season. Albrook and Fort Kobbe have climatic regimes similar to the principal sites.

The Albrook and Chiva Chiva main sites are approximately four kilometers apart. Each has a 46 meter walk-up tower and an air-conditioned building to house the recording equipment and observers. Both sites are approximately 30 meters above sea level. The top of the forest canopy at the Albrook site is about 26.5 meters above the ground.

Instrumentation. A number of climatic elements are measured at the Albroom and Chiva Chiva sites, but observations at the Rio Hato site are limited to temperature, precipitation, relative humidity, and wind. Types of observations and frequencies are shown on Figure 2. The towers at the Albroom and Chiva Chiva sites are similarly oriented. Sensing equipment is mounted at several levels on the towers to provide measurements through the vertical profile. Additional instruments are emplaced in the immediate vicinity on or near the ground. All instrument exposures are duplicated at each site. Figures 3, 4, and 5 show the instrument array at these sites.

Data Reduction and Storage. All data, as applicable, are recorded at or reduced to each full hour and transposed to punch cards. These punch cards, together with all raw data, are stored in the Tropic Test Center Technical Library Annex.

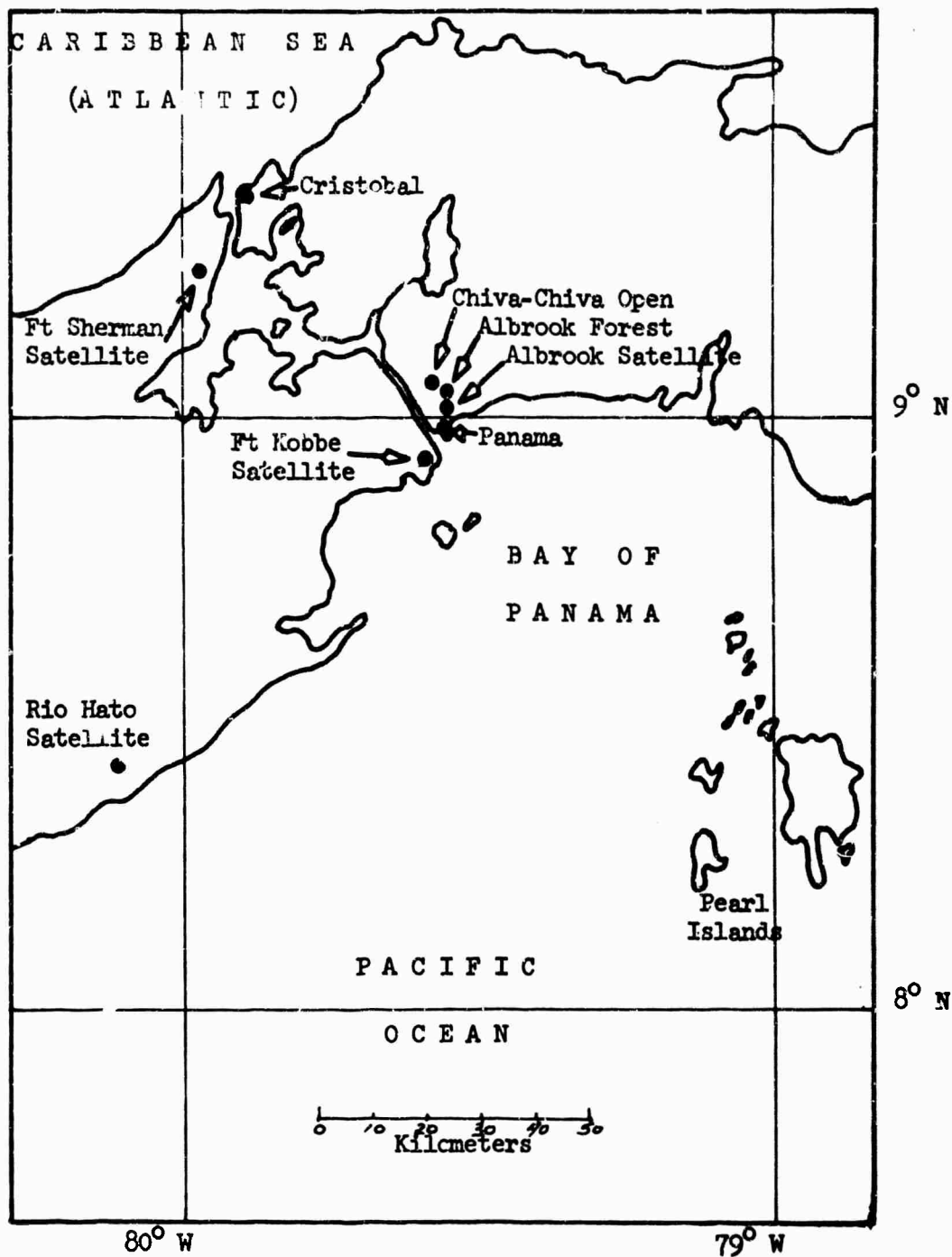


FIGURE 1.
LOCATION MAP, ISTHMUS OF PANAMA

FIGURE 2. FREQUENCY OF OBSERVATIONS

# Element	Sfc	Height (meters)						Frequency
		0.5	1.0	2.0	4.0	8.0	13.5	26.5
Temperature:								
Dry Bulb	2	2	1	2	2	2	2	2
Wet Bulb	-	2	-	2	-	-	-	-
Grass Minimum	4	-	-	-	-	-	-	-
WBGT Index	-	-	2	-	-	-	-	-
Relative Humidity	-	2	1	2	2	2	2	2
Barometric Pressure	-	-	2	-	-	-	-	-
Evaporation	2	-	-	-	-	-	-	3
Precipitation:								
Recording Gage	-	-	1	-	-	-	-	-
Manual Gage	-	-	3	-	-	-	-	-
Stem Flow	-	-	3	-	-	-	-	-
Wind:								
Direction	-	-	-	-	5	-	-	-
Speed	-	-	-	2**	5	-	2**	2

* Observation made with sling psychrometer: when recorders are inoperative.

** Hourly.

Instrument descriptions are contained in the Environmental Data Base semiannual reports.

1. All sites
2. Albrook and Chiva Chiva
3. Albrook only
4. Chiva Chiva only
5. Main sites and Rio Hato

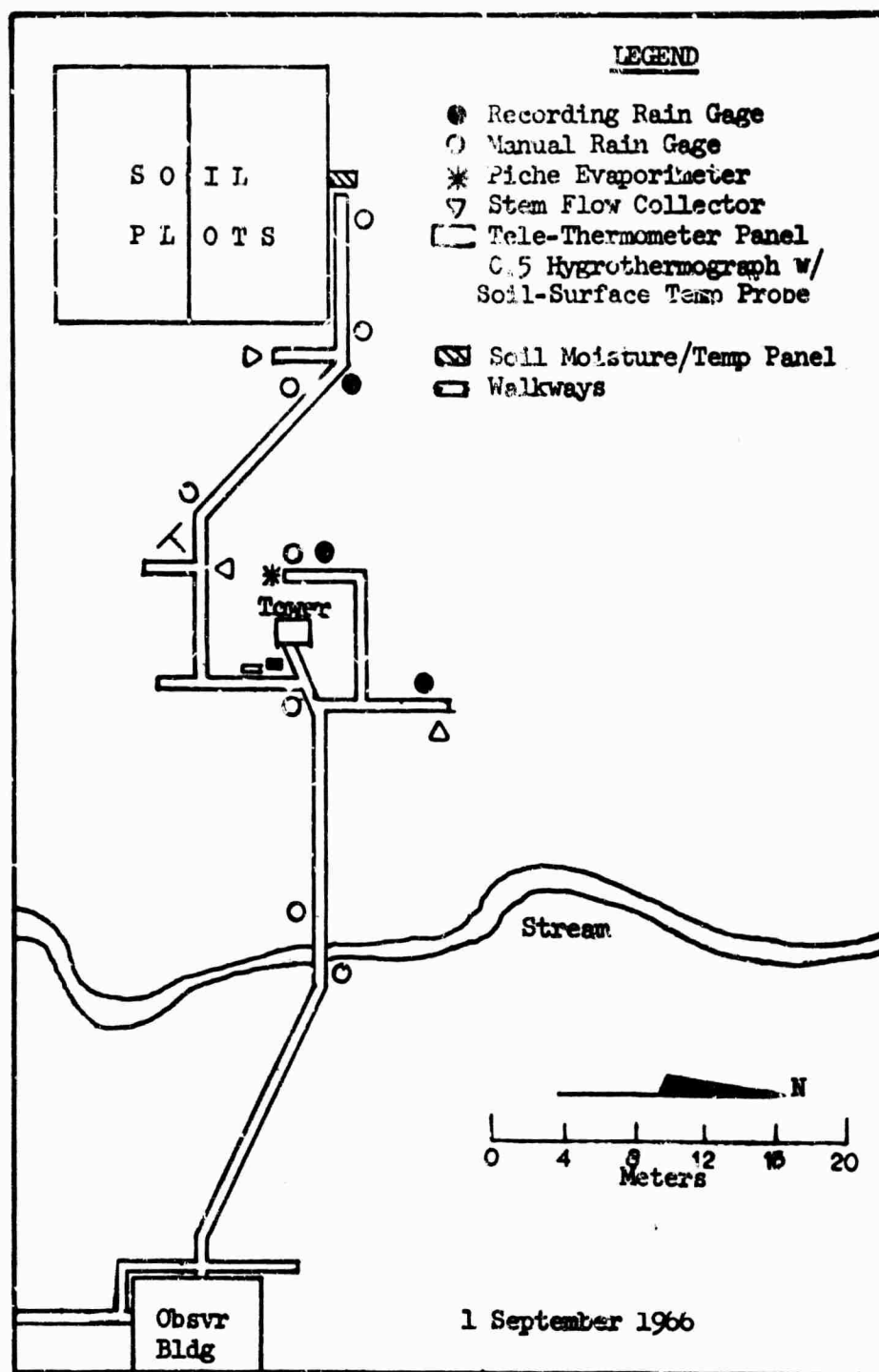


FIGURE 3.

ALBROOK FOREST SITE, GENERALIZED PLOT

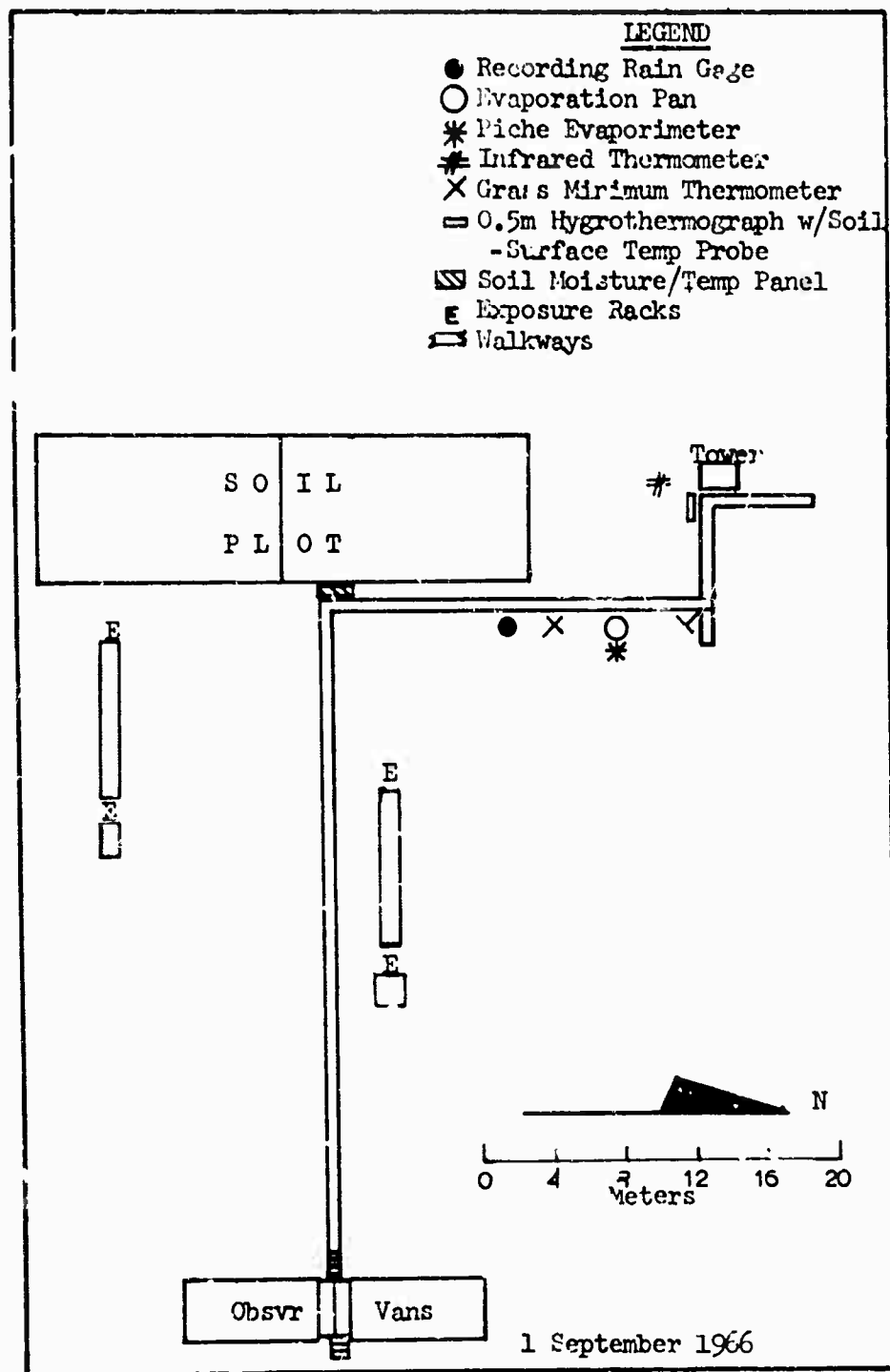


FIGURE 4.
CHIVA CHIVA OPEN, GENERALIZED PLOT

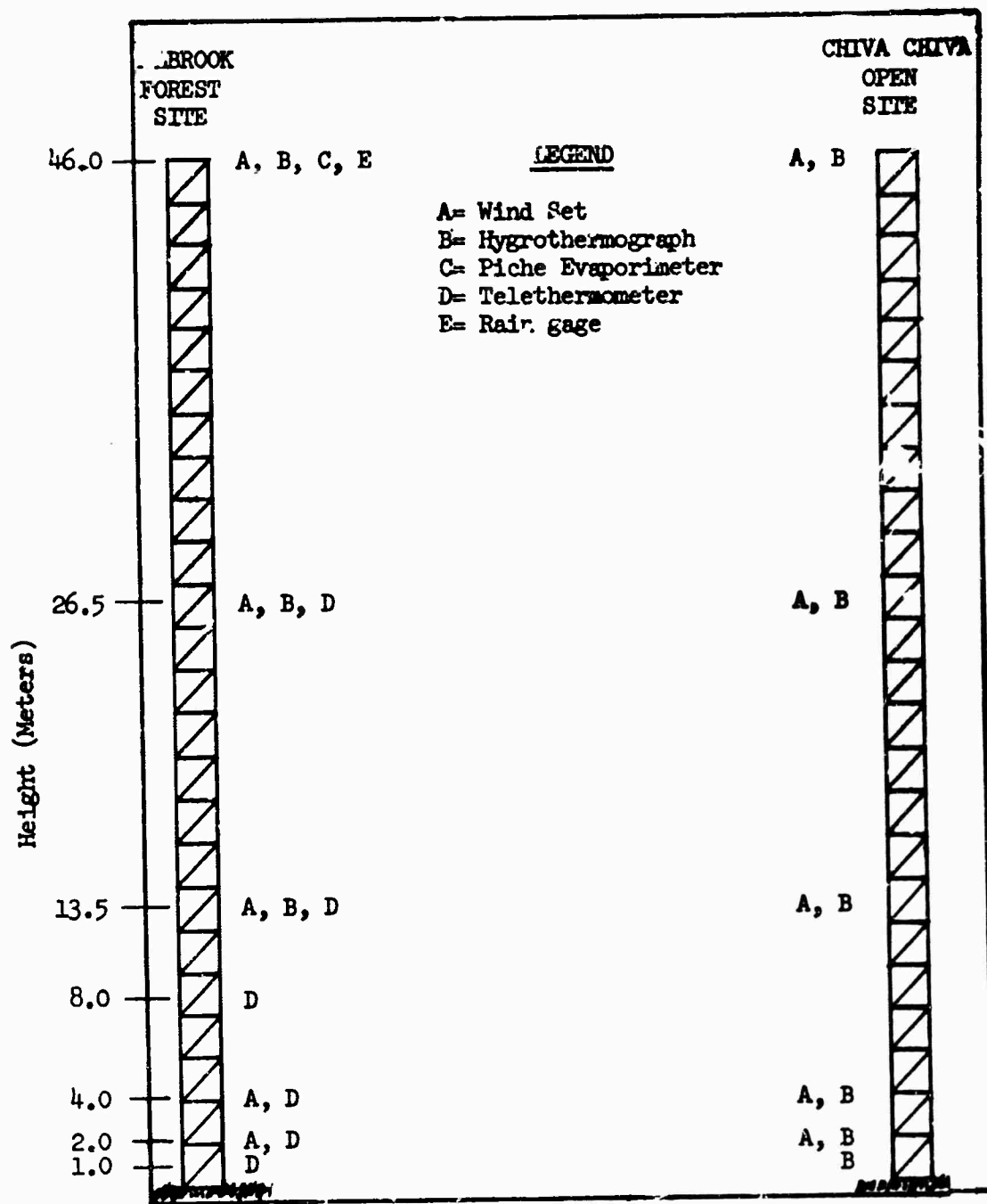


FIGURE 5.
INSTRUMENT LOCATION ON TOWERS

HOURLY DATA

SEPTEMBER 1966

Exposure		Monthly Means of Air Temperature by Hour (°F)																								Monthly Summary						
Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No. of Obs.	Min.	Mean	Max.			
Albrook (Forest site)	46.0m	75.3	75.1	74.9	74.7	74.6	75.5	78.6	80.3	81.8	82.0	82.2	82.3	82.2	81.0	80.4	79.7	78.4	77.0	76.8	76.5	76.1	76.0	75.7	75.5	720	70.6	77.7	98.4			
	28.5m									This level was not instrumented for air temperature at this time																						
	26.5m	74.5	74.4	74.1	74.0	73.9	73.8	75.6	79.4	81.2	82.6	83.5	84.2	83.4	82.4	82.1	81.0	79.1	78.1	76.5	76.1	75.7	75.3	75.0	74.7	696	69.6	77.9	90.8			
	13.5m	74.2	74.0	73.8	73.7	73.4	73.4	74.4	76.3	78.8	80.5	81.7	82.2	82.2	81.6	80.1	79.6	78.6	77.6	76.7	76.2	75.8	74.4	74.1	74.8	672	69.8	77.0	88.2			
	8.0m	74.4	74.3	74.1	73.9	73.8	73.7	74.1	76.4	78.6	80.2	81.5	81.9	81.8	81.1	80.2	79.4	78.3	77.3	76.5	75.1	75.7	75.4	75.1	74.7	720	69.8	77.0	86.8			
	4.0m	74.3	74.1	74.0	73.8	73.6	73.4	74.0	76.7	79.0	80.3	81.4	81.9	82.0	81.3	80.1	79.1	78.1	77.1	76.3	75.9	75.5	75.4	74.9	74.5	703	69.5	76.9	96.1			
	2.0m	74.3	74.1	74.0	73.8	73.6	73.4	74.0	76.6	78.8	80.1	81.2	81.6	81.7	81.0	79.9	79.0	78.1	77.1	76.3	75.9	75.5	75.4	74.9	74.4	703	70.0	76.9	86.0			
	1.0m	74.8	74.6	74.4	74.2	74.0	73.9	74.2	75.6	77.7	79.3	80.4	81.0	81.1	80.8	80.2	79.4	78.5	77.6	77.0	76.5	76.0	75.7	75.5	75.2	719	70.0	76.9	83.4			
0.5m	74.7	74.6	74.5	74.3	74.1	74.1	74.3	76.5	78.2	79.5	80.2	80.6	80.7	80.3	79.5	78.9	77.8	77.0	76.4	75.9	75.7	75.4	75.2	75.0	720	71.6	76.8	84.0				

46.0m	74.8	74.6	74.4	74.1	74.0	73.9	75.2	78.0	80.1	81.4	82.0	81.9	82.0	80.8	79.9	79.1	77.8	77.3	76.5	76.3	76.1	75.8	75.5	75.3	708	68.9	77.4	87.2
28.5m	This level was not instrumented for air temperature at this time																											
26.5m	74.8	74.5	74.4	74.3	74.2	74.0	75.6	78.6	80.7	82.4	83.1	83.1	83.1	82.1	80.9	80.0	79.0	78.0	77.0	76.5	76.2	76.0	75.5	75.3	710	77.1	77.9	89.0
13.5m	74.9	74.7	74.5	74.4	74.4	74.1	75.5	79.7	81.2	82.8	83.7	83.5	83.8	82.7	81.4	80.1	78.9	78.1	77.0	76.5	76.0	75.9	75.4	75.3	711	70.0	78.1	91.6
8.0m	This level was not instrumented for air temperature at this time																											
4.0m	73.9	73.7	73.4	73.3	73.2	73.0	75.9	78.9	81.4	83.6	84.7	84.4	85.0	83.6	81.7	80.3	79.0	77.7	76.5	75.9	75.4	75.2	74.8	74.4	719	68.5	77.9	92.8
2.0m	73.8	73.6	73.3	73.2	73.0	72.9	75.5	80.0	81.6	84.0	85.1	84.8	85.2	83.7	81.6	80.2	78.9	77.9	76.8	76.2	75.5	75.2	74.6	74.2	719	68.4	78.0	92.6
1.0m																												
0.5m	74.5	74.2	73.9	73.8	73.8	73.4	75.2	78.2	81.0	83.4	84.8	85.1	85.8	83.9	82.5	80.9	78.9	77.9	77.0	76.3	75.7	75.4	75.3	74.8	720	70.0	78.1	91.9

[illegible]

SEPTEMBER 1966

Exposure		Monthly Ranges of Air Temperature by Hour (°F)																								Monthly Summary *				
Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
Albrook (Forest site)	46.0m	5.0	4.8		6.0	5.3	5.6	6.0	7.0	12.5	10.6	15.0	14.3	11.1	11.6	15.1	15.0	16.8	12.0	7.5	6.5	5.1	6.0	6.0	5.6	5.5				
	28.5m								This level was not instrumented for air temperature at this time																					
	26.5m	6.5	7.1	7.5	7.6	7.5	7.4	9.0	16.2	13.0	17.5	16.0	14.0	18.0	18.0	15.7	17.9	12.0	12.1	6.5	6.5	6.7	6.8	6.6	7.5					
	13.5m	5.3	4.8	5.2	5.4	5.6	6.0	7.1	7.1	9.1	11.5	13.2	12.8	13.0	13.0	13.7	12.2	7.5	5.8	4.8	5.2	5.5	5.6	6.6	6.7					
	8.0m	6.0	6.3	6.0	7.0	7.3	7.5	7.8	9.3	8.1	9.8	10.8	10.2	11.9	13.0	14.3	11.2	7.6	7.2	7.0	5.5	6.0	5.2	6.1	6.0					
	4.0m	5.0	5.5	6.5	6.5	6.8	7.0	6.4	7.2	7.5	9.3	10.3	9.2	10.1	12.1	12.0	12.0	8.5	5.5	6.0	5.5	5.0	6.0	5.0	5.0					
	2.0m	5.5	5.5	6.7	7.5	7.0	6.5	6.9	7.6	7.5	8.1	8.9	10.1	10.2	12.0	12.0	11.5	7.0	5.5	5.8	5.5	6.0	6.5	5.5	5.0					
	1.0m	5.9	5.7	6.7	7.3	7.8	7.4	7.7	7.9	7.8	8.4	8.3	9.0	8.9	10.3	10.3	11.8	6.1	6.0	4.8	4.5	4.3	3.9	4.9	4.9					
0.5m	4.5	4.0	4.5	4.8	5.0	4.9	5.4	5.7	5.5	6.7	7.6	7.6	7.2	6.4	8.1	8.5	9.0	6.2	6.0	4.5	5.0	4.5	4.5	4.3	4.5					

* No monthly summary was computed for the ranges.

Chiva Chiva (Open site)	46.0m	6.2	9.1	9.9	9.9	9.9	7.7	9.8	12.3	13.4	15.0	14.1	12.2	13.0	16.5	15.8	18.4	15.8	9.7	5.4	6.0	4.8	4.7	5.2	7.5
	28.5m	This level was not instrumented for air temperature at this time																							
	26.5m	6.3	6.5	6.9	6.4	7.0	7.0	8.4	14.1	15.0	15.9	14.4	13.5	14.0	16.0	15.5	15.1	15.5	10.0	6.5	5.5	6.0	6.0	7.0	7.0
	13.5m	6.6	7.3	7.1	7.3	6.6	6.8	8.0	10.0	13.4	18.2	17.2	16.5	15.2	19.3	17.5	16.1	14.7	9.3	6.7	5.7	6.2	5.9	6.7	6.8
	8.0m	This level was not instrumented for air temperature at this time																							
	4.0m	6.0	7.0	7.0	8.4	7.0	8.0	9.0	15.0	11.5	14.0	17.0	14.5	13.0	15.0	17.0	16.0	14.5	8.5	6.0	5.0	5.5	4.5	7.0	5.5
	2.0m	5.5	7.0	7.5	7.5	7.5	8.0	9.0	13.8	11.8	14.9	17.8	15.8	14.0	14.4	17.7	15.7	14.0	8.5	6.0	5.0	5.0	5.5	8.0	6.0
	0.5m	4.5	5.5	6.0	6.6	6.5	6.0	6.0	7.6	8.6	11.1	13.1	15.6	14.6	16.0	14.7	14.2	12.5	7.0	6.0	5.0	5.0	4.5	5.0	5.0

Rio Hato	1.5m	4.5	5.0	5.0	5.0	5.0	5.5	5.0	9.0	10.5	12.5	13.5	11.0	9.5	9.5	10.0	9.5	11.0	9.5	7.0	6.5	5.0	5.0	4.5	4.0	
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Exposure		Monthly Means of Relative Humidity by Hour (%)																								Monthly Summary				
Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No. of Obs.	Mean	Min.	Max.	
Albrook (Forest site)	46.0m	97.0	97.0	97.0	97.0	97.0	97.0	96.0	91.0	86.0	81.0	77.0	76.0	77.0	81.0	83.0	85.0	89.0	92.0	95.0	96.0	96.0	97.0	97.0	97.0	97.0	720	96.0	91.0	98.0
	28.5m	This level was not instrumented for relative humidity at this time																												
	26.5m	97.0	97.0	97.0	97.0	97.0	97.0	95.0	93.0	88.0	84.0	81.0	81.0	83.0	85.0	86.0	89.0	91.0	95.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	720	97.0	92.0	100.0
	13.5m	97.0	97.0	97.0	97.0	97.0	97.0	97.0	96.0	91.0	86.0	83.0	83.0	85.0	86.0	89.0	92.0	92.0	95.0	96.0	96.0	96.0	96.0	97.0	97.0	97.0	719	96.0	93.0	100.0
	8.0m	This level was not instrumented for relative humidity at this time																												
Albrook (Forest site)	4.0m	98.0	98.0	98.0	98.0	98.0	98.0	98.0	96.0	91.0	87.0	85.0	84.0	83.0	85.0	89.0	91.0	94.0	95.0	97.0	97.0	98.0	98.0	98.0	98.0	98.0	703	95.0	94.0	100.0
	2.0m	98.0	98.0	98.0	98.0	98.0	98.0	98.0	96.0	93.0	89.0	87.0	86.0	85.0	87.0	90.0	92.0	94.0	96.0	97.0	97.0	97.0	98.0	98.0	98.0	98.0	703	94.0	94.0	100.0
	1.0m	97.0	97.0	97.0	97.0	97.0	97.0	98.0	100.0	98.0	94.0	91.0	89.0	88.0	89.0	90.0	92.0	93.0	94.0	95.0	96.0	97.0	97.0	97.0	97.0	719	98.0	95.0	100.0	
	0.5m	97.0	97.0	97.0	96.0	96.0	97.0	96.0	93.0	93.0	92.0	91.0	91.0	90.0	91.0	91.0	92.0	95.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	720	96.0	95.0	100.0

Chiva Chiva (Open site)	46.0m	96.0	97.0	97.0	96.0	96.0	96.0	95.0	93.0	83.0	77.0	73.0	74.0	75.0	78.0	82.0	84.0	85.0	88.0	93.0	93.0	94.0	95.0	95.0	95.0	693	54.0	89.0	100.0
	28.5m	This level was not instrumented for relative humidity at this time																											
	26.5m	96.0	97.0	97.0	96.0	96.0	96.0	95.0	90.0	83.0	79.0	76.0	76.0	75.0	79.0	82.0	86.0	87.0	91.0	94.0	94.0	95.0	96.0	95.0	96.0	718	56.0	89.0	100.0
	13.5m	97.0	97.0	97.0	97.0	97.0	97.0	96.0	93.0	83.0	78.0	75.0	75.0	75.0	79.0	84.0	86.0	89.0	91.0	94.0	95.0	95.0	96.0	96.0	96.0	715	57.0	94.0	100.0
	8.0m	This level was not instrumented for relative humidity at this time																											
Chiva Chiva	4.0m	96.0	97.0	97.0	97.0	97.0	97.0	92.0	82.0	79.0	74.0	71.0	72.0	71.0	74.0	80.0	82.0	86.0	91.0	94.0	95.0	96.0	96.0	96.0	96.0	719	52.0	88.0	100.0
	2.0m	98.0	97.0	97.0	98.0	98.0	97.0	94.0	81.0	76.0	73.0	70.0	70.0	70.0	73.0	78.0	81.0	88.0	92.0	95.0	95.0	97.0	97.0	97.0	97.0	719	51.0	88.0	100.0
	1.0m	97.0	97.0	97.0	97.0	97.0	97.0	96.0	91.0	81.0	74.0	70.0	72.0	72.0	78.0	81.0	85.0	88.0	94.0	96.0	96.0	97.0	97.0	97.0	97.0	710	44.0	89.0	100.0
	0.5m	96.0	96.0	96.0	95.0	95.0	95.0	95.0	89.0	85.0	80.0	78.0	77.0	76.0	79.0	80.0	83.0	88.0	92.0	94.0	95.0	95.0	96.0	95.0	95.0	720	58.0	89.0	100.0

Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No. of obs.	Mean	Min.	Max.
Albrook	1.5m	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	93.0	88.0	85.0	82.0	83.0	83.0	85.0	86.0	88.0	91.0	97.0	100.0	100.0	100.0	100.0	100.0	658	63.0	94.0	100.0

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Exposure		Monthly Ranges of Relative Humidity by Hour (%)																								Monthly Summary*	
Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Albrook (Forest site)	46.0m	3.0	5.0	3.0	4.0	4.0	4.0	10.0	22.0	28.0	36.0	35.0	34.0	55.0	41.0	38.0	42.0	32.0	20.0	8.0	7.0	7.0	7.0	7.0	7.0		
	28.5m							This level was not instrumented for relative humidity at this time																			
	26.5m	2.0	2.0	2.0	2.0	2.0	2.0	23.0	34.0	34.0	40.0	41.0	43.0	40.0	37.0	35.0	39.0	31.0	23.0	7.0	5.0	3.0	5.0	3.0	3.0		
	13.5m	9.0	10.0	9.0	9.0	10.0	14.0	14.0	15.0	27.0	33.0	35.0	37.0	38.0	34.0	33.0	28.0	29.0	19.0	10.0	11.0	10.0	9.0	9.0	11.0		
	8.0m							This level was not instrumented for relative humidity at this time																			
	4.0m	7.0	5.0	7.0	8.0	5.0	5.0	8.0	9.0	19.0	25.0	22.0	26.0	33.0	34.0	34.0	27.0	17.0	13.0	11.0	9.0	9.0	9.0	5.0	5.0		
	2.0m	5.0	8.0	7.0	9.0	5.0	5.0	5.0	12.0	14.0	21.0	23.0	28.0	31.0	34.0	34.0	27.0	17.0	15.0	12.0	9.0	9.0	9.0	5.0	5.0		
	1.0m	6.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	14.0	17.0	23.0	25.0	31.0	32.0	31.0	32.0	20.0	13.0	10.0	9.0	7.0	6.0	6.0	5.0		
	0.5m	10.0	8.0	10.0	10.0	10.0	10.0	12.0	10.0	13.0	12.0	14.0	14.0	20.0	21.0	22.0	20.0	16.0	10.0	8.0	8.0	8.0	6.0	8.0	8.0		

* No monthly summary was computed for the ranges.

Chiva Chiva (Open site)	46.0m	7.0	6.0	6.0	7.0	8.0	9.0	12.0	14.0	37.0	36.0	37.0	40.0	46.0	46.0	44.0	42.0	20.0	28.0	12.0	8.0	10.0	6.0	6.0	14.0
	28.5m	This level was not instrumented for relative humidity at this time																							
	26.5m	4.0	4.0	4.0	6.0	7.0	8.0	11.0	30.0	32.0	36.0	38.0	41.0	44.0	43.0	42.0	40.0	36.0	28.0	8.0	10.0	6.0	8.0	7.0	9.0
	13.5m	9.0	9.0	9.0	9.0	9.0	9.0	23.0	33.0	32.0	34.0	38.0	43.0	37.0	36.0	39.0	35.0	30.0	9.0	7.0	7.0	7.0	7.0	8.0	
	8.0m	This level was not instrumented for relative humidity at this time																							
	4.0m	7.0	7.0	5.0	7.0	5.0	7.0	19.0	39.0	28.0	34.0	31.0	45.0	30.0	43.0	41.0	36.0	29.0	17.0	17.0	11.0	9.0	10.0	9.0	9.0
	2.0m	5.0	10.0	16.0	11.0	6.0	7.0	24.0	33.0	31.0	38.0	38.0	43.0	36.0	40.0	43.0	35.0	30.0	20.0	14.0	11.0	8.0	8.0	6.0	6.0
	1.0m	7.0	5.0	5.0	4.0	4.0	7.0	23.0	35.0	45.0	50.0	56.0	53.0	54.0	52.0	47.0	42.0	42.0	22.0	10.0	7.0	5.0	4.0	5.0	4.0
	0.5m	8.0	6.0	7.0	7.0	10.0	9.0	8.0	14.0	16.0	21.0	24.0	30.0	31.0	24.0	20.0	35.0	37.0	14.0	10.0	11.0	13.0	11.0	13.0	11.0

Hato	1.5m	1.0	1.0	1.0	2.0	1.0	1.0	3.0	18.0	22.0	26.0	28.0	28.0	37.0	56.0	28.0	30.0	26.0	15.0	9.0	2.0	1.0	1.0	2.0	1.0		
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Exposure	Monthly Means ² of other Elements by Hour																								Monthly Summary				
	Site	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No of Obs.	Min.	Mean	Max.
Albrook (Forest site)	ST	75.0	75.0	75.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	720	74.0	75.0	76.0
	W8 (4.0m)	73.9	73.7	73.6	73.4	73.1	73.0	73.6	75.8	77.1	77.2	77.9	78.0	77.8	77.6	77.2	77.0	76.6	76.0	75.5	75.2	75.0	74.8	74.5	74.1	703	69.	75.0	81.5
	W8 (0.5m)	73.9	73.7	73.6	73.4	73.1	73.0	73.6	75.8	77.3	77.5	78.1	78.2	78.1	77.9	77.3	77.0	76.6	76.1	75.6	75.2	75.0	74.9	74.5	74.1	703	69.0	75.5	81.5
	BP (0.5m)	74.1	73.8	73.8	73.6	73.4	73.4	73.5	74.9	76.6	77.6	78.1	78.4	78.4	78.0	77.5	77.2	76.7	76.3	75.9	75.4	75.1	74.9	74.7	74.4	720	69.7	75.4	80.8
	8P	.752	.739	.723	.717	.717	.727	.744	.757	.774	.781	.780	.767	.736	.720	.696	.687	.683	.693	.710	.726	.745	.762	.772	.767	720	.645	.732	.825
Albrook (Forest site)	P1	0.04	0.01	0.01	0.04	0.01	0.00	0.01	0.00	0.01	0.05	0.15	0.23	0.25	0.30	0.17	0.05	0.06	0.03	0.05	0.02	0.01	0.00	0.00	0.02	551	0.00	7.31	1.00
	P2	0.06	0.01	0.01	0.01	0.03	0.04	0.05	0.08	0.14	0.07	0.07	0.18	0.33	0.67	0.15	0.10	0.05	0.05	0.09	0.00	0.00	0.00	0.00	0.20	720	0.00	5.95	0.80
	P3	0.04	0.00	0.01	0.00	0.02	0.04	0.03	0.11	0.14	0.11	0.03	0.18	0.46	0.07	0.16	0.16	0.04	0.03	0.08	0.00	0.00	0.00	0.00	0.00	720	0.00	6.14	1.09
	P4	0.09	0.02	0.00	0.01	0.03	0.08	0.07	0.12	0.13	0.25	0.15	0.27	0.34	0.31	0.15	0.24	0.05	0.05	0.09	0.00	0.00	0.00	0.00	0.00	720	0.00	10.52	1.10

Note: Total (Mean) for P1 includes 6-hourly readings which are not included in hourly means.

Chiva Chiva (Open site)	ST	76.0	76.0	75.0	75.0	75.0	75.0	76.0	80.0	85.0	88.0	90.0	94.0	90.0	88.0	85.0	83.0	81.0	79.0	79.0	79.0	78.0	77.0	77.0	76.0	720	72.0	81.0	106.0
	W8 (4.0m)	73.2	73.1	72.9	72.6	72.6	72.4	74.6	75.3	76.7	76.7	76.9	76.8	77.2	76.6	76.0	75.6	76.2	76.0	75.6	75.2	74.8	74.6	74.2	73.6	715	67.5	74.9	80.2
	W8 (2.0m)	73.3	73.1	72.9	72.8	72.6	72.4	74.4	75.6	76.1	77.4	77.6	77.5	77.6	77.1	76.4	75.8	76.3	76.2	75.8	75.2	74.8	74.6	74.1	73.8	695	67.6	75.1	81.3
	W8 (0.5m)	73.7	73.3	73.2	72.9	72.8	72.5	74.0	75.9	77.4	77.5	79.0	79.1	79.4	78.7	77.5	76.5	76.4	76.2	75.7	75.2	74.7	74.6	74.4	73.9	720	68.3	75.6	82.9
	BP	.805	.788	.774	.777	.778	.768	.805	.822	.835	.840	.838	.818	.791	.769	.752	.745	.743	.755	.772	.789	.806	.824	.829	.819	720	.705	.794	.880
Chiva Chiva (Open site)	PS	0.03	0.07	0.01	0.01	0.02	0.02	0.05	0.08	0.16	0.08	0.07	0.22	0.07	0.13	0.23	0.16	0.17	0.06	0.04	0.10	0.05	0.00	0.00	0.04	720	0.00	6.79	0.66

¹ ST - Soil surface temperature (°F)

W8 - Wet bulb temperature (°F)

8P - Barometric pressure (in. of Hg minus 29.0)

PS - Precipitation at 1.0 m in open area (in.)

P1 - Precipitation at 45.0 m, above canopy (in.)

P2 - Precipitation under full canopy (in.)

P3 - Precipitation under drip canopy (in.)

P4 - Precipitation under open canopy (in.)

² Monthly means of precipitation are computed for precipitation days. Precipitation totals are substituted for the mean in the monthly summary.

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Exposure	Site Code ¹	Monthly Ranges ² of other Elements by Hour																								Monthly Summary *	
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
ST WB (4.0m)	ST	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
	WB	5.5	5.5	6.0	6.3	6.8	7.0	6.6	5.9	4.2	4.7	6.2	5.3	4.5	8.0	6.5	7.0	8.0	5.5	4.5	3.5	4.5	4.5	4.9	4.2		
	WB	5.5	6.0	6.0	6.3	6.8	6.9	6.4	5.3	4.4	5.0	5.7	5.5	3.7	7.5	6.5	7.0	7.0	5.5	4.0	3.5	4.2	4.5	4.9	4.2		
	WB	4.5	5.0	5.5	5.7	6.7	6.7	6.6	6.5	4.9	5.0	5.3	5.2	5.0	7.0	7.5	5.5	5.5	4.5	4.0	4.0	4.0	4.3	4.5	4.5		
BP P1 P2 P3 P4	BP	.065	.075	.070	.075	.085	.060	.09	.100	.085	.115	.095	.080	.105	.120	.070	.065	.080	.085	.085	.060	.050	.055	.070	.075		
	P1	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.99	0.67	0.49	0.13	0.15	0.10	0.05	0.02	0.00	0.00	0.00	0.00		
	P2	0.02	0.00	0.00	0.00	0.05	0.00	0.06	0.00	0.26	0.12	0.12	0.28	0.73	0.19	0.40	0.29	0.14	0.05	0.00	0.00	0.00	0.00	0.00	0.00		
	P3	0.03	0.00	0.00	0.00	0.01	0.07	0.04	0.00	0.23	0.00	0.04	0.22	1.07	0.29	0.39	0.54	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00		
	P4	0.00	0.01	0.00	0.00	0.03	0.05	0.06	0.00	0.35	0.00	0.00	0.33	1.03	0.88	0.58	1.09	0.12	0.08	0.14	0.00	0.00	0.00	0.00	0.00		

* No monthly summary was computed for the ranges.

ST WB (4.0m)	ST	4.0	4.0	5.0	5.0	6.0	6.0	5.0	12.0	19.0	22.0	26.0	24.0	26.0	24.0	25.0	16.0	14.0	8.0	8.0	4.0	4.0	3.0	3.0	4.0		
	WB	5.0	6.5	7.0	7.0	7.0	8.0	5.5	6.3	5.5	6.0	7.0	6.0	5.5	6.5	7.0	8.0	7.8	5.8	3.8	4.5	3.5	4.5	7.0	5.5		
	WB	5.0	6.5	8.0	7.0	7.0	8.0	5.5	6.0	5.5	5.0	7.0	6.0	5.5	7.5	7.5	8.0	8.0	6.5	4.0	4.5	4.0	4.5	7.5	5.5		
	WB	4.5	4.9	5.5	6.0	7.0	7.4	6.2	6.4	6.0	6.1	6.9	7.4	6.9	10.0	9.6	8.9	8.2	6.0	4.2	4.0	4.0	4.0	5.0	4.0		
BP PS	BP	.070	.075	.070	.075	.090	.080	.090	.100	.080	.120	.080	.075	.100	.100	.080	.075	.060	.075	.080	.075	.060	.065	.075	.080		
	PS	0.04	0.04	0.00	0.00	0.04	0.01	0.06	0.13	0.18	0.11	0.00	0.50	0.14	0.31	0.54	0.30	0.61	0.13	0.00	0.00	0.00	0.00	0.00	0.00		

¹ ST - Soil surface temperature (°F)
WB - Wet bulb temperature (°F)
BP - Barometric pressure (in. of Hg minus 29.0)

² Monthly ranges of precipitation are computed for precipitation days. Precipitation totals are substituted for the mean in the monthly summary.

PS - Precipitation at 1.0 m in open area (in.)
P1 - Precipitation at 46.0 m, above canopy (in.)
P2 - Precipitation under full canopy (in.)

P3 - Precipitation under drip canopy (in.)
P4 - Precipitation under open canopy (in.)

SEPTEMBER 1966

Exposure	Monthly Means of Wind Speed by Hour (miles/hr.)																								Monthly Summary																						
	Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No of Obs.	Min.	Mean	Max.																	
Aldbrook (Forest site)	46.0 m		1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	4.0	5.0	5.0	4.0	2.0	3.0	1.0	2.0	2.0	2.0	2.0	2.0	1.0	719	0.0	2.0	28.0																	
	28.5 m									This level was not instrumented for wind speed at this time																																					
	26.5 m		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	720	0.0	1.0	7.0																	
	13.5 m		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	720	0.0	0.0	4.0																	
	8.0 m									This level was not instrumented for wind speed at this time																																					
	4.0 m		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	720	0.0	0.0	2.0																
Aldbrook (Forest site)	2.0 m		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	720	0.0	0.0	0.0																	
	1.0 m									This level was not instrumented for wind speed at this time																																					
	0.5 m									This level was not instrumented for wind speed at this time																																					

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Chiva Chiva (Open site)	46.0 m	3.0	3.0	3.0	3.0	4.0	5.0	6.0	7.0	7.0	8.0	7.0	7.0	7.0	7.0	5.0	5.0	5.0	4.0	3.0	3.0	3.0	720	0.0	5.0	20.0
	28.5 m	This level was not instrumented for wind speed at this time																								
	26.5 m	0.0	1.0	1.0	1.0	1.0	2.0	3.0	4.0	5.0	5.0	6.0	6.0	6.0	5.0	4.0	4.0	2.0	1.0	1.0	1.0	1.0	712	0.0	2.0	22.0
	13.5 m	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	3.0	4.0	4.0	5.0	4.0	3.0	2.0	2.0	1.0	1.0	1.0	0.0	0.0	712	0.0	2.0	15.0
	8.0 m	This level was not instrumented for wind speed at this time																								
	4.0 m	2.0	2.0	1.0	2.0	2.0	1.0	2.0	3.0	4.0	5.0	6.0	6.0	6.0	5.0	5.0	3.0	2.0	2.0	1.0	2.0	2.0	718	0.0	3.0	14.0
	2.0 m	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	3.0	3.0	4.0	4.0	3.0	2.0	2.0	1.0	0.0	1.0	0.0	0.0	712	0.0	1.0	10.0
	1.0 m	This level was not instrumented for wind speed at this time																								
	0.5 m	This level was not instrumented for wind speed at this time																								

Rio	4.0 m		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	4.0	2.0	2.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	432	0.0	1.0	11.0
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SEPTEMBER 1966

Exposure	Monthly Ranges of Wind Speed by Hour (miles/hr.)																								Monthly Summary																					
	Site	Level	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No. of Obs.	Min.	Mean	Max.																
Albrook (Forest site)	46.0 m	6.0	7.0	6.0	8.0	14.0	15.0	5.0	7.0	12.0	10.0	9.0	14.0	28.0	15.0	18.0	13.0	20.0	9.0	10.0	10.0	10.0	13.0	9.0	9.0	9.0																				
	28.5 m								This level was not instrumented for wind speed at this time																																					
	26.5 m	3.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	3.0	3.0	6.0	4.0	6.0	6.0	4.0	5.0	7.0	3.0	3.0	3.0	6.0	7.0	3.0	1.0	1.0																				
	13.5 m	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	1.0	2.0	3.0	2.0	2.0	4.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	2.0	1.0	0.0	0.0																				
	8.0 m								This level was not instrumented for wind speed at this time																																					
	4.0 m	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	0.0	2.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0																				
	2.0 m	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																				
	1.0 m									This level was not instrumented for wind speed at this time																																				
	0.5 m									This level was not instrumented for wind speed at this time																																				

* No monthly summary was computed for the ranges.

Chiva Chiva (Open site)	46.0 m	9.0	8.0	7.0	8.0	10.0	8.0	6.0	10.0	10.0	9.0	20.0	15.0	17.0	11.0	13.0	10.0	15.0	8.0	11.0	16.0	19.0	9.0	10.0	8.0					
	28.5 m								This level was not instrumented for wind speed at this time																					
	26.5 m	2.0	7.0	5.0	5.0	6.0	4.0	5.0	8.0	8.0	7.0	15.0	13.0	18.0	11.0	15.0	12.0	15.0	7.0	7.0	15.0	22.0	7.0	6.0	4.0					
	13.5 m	1.0	3.0	3.0	3.0	2.0	4.0	5.0	7.0	7.0	7.0	13.0	12.0	15.0	9.0	7.0	7.0	19.0	3.0	3.0	5.0	15.0	2.0	2.0	2.0					
	8.0 m								This level was not instrumented for wind speed at this time																					
	4.0 m	4.0	6.0	8.0	5.0	6.0	5.0	5.0	8.0	7.0	8.0	7.0	10.0	14.0	8.0	9.0	10.0	9.0	6.0	6.0	8.0	11.0	4.0	6.0	4.0					
	2.0 m	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	5.0	5.0	8.0	8.0	10.0	8.0	8.0	8.0	10.0	3.0	2.0	3.0	10.0	1.0	3.0	1.0					
	1.0 m								This level was not instrumented for wind speed at this time																					
	0.5 m								This level was not instrumented for wind speed at this time																					

Rio Hato	4.0 m	0.0	1.0	2.0	1.0	3.0	3.0	5.0	3.0	1.0	3.0	6.0	7.0	11.0	4.0	6.0	2.0	2.0	2.0	3.0	3.0	1.0	1.0	1.0	0.0					
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ALBROOK (Forest site) SEPTEMBER 1966

		Relative Frequencies* of Wind Directions by Hour at 46.0 m. (%)																							
Hr	Dir.	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
N		3.3				3.3		3.3	3.3	3.3	3.3			3.6	3.3	6.7	3.3	3.3	3.3			3.3	3.3		
NNE			6.7		3.3		3.3						3.6	3.6					3.3						
NE		3.3				6.7		3.3	3.3	3.3		6.7		3.6					3.3		3.3	3.3	3.3	5.7	6.7
ENE				3.3		3.3									3.3										
E									3.3	3.3	3.3	3.6	3.6	3.6		3.3	3.3	6.7			3.3	3.3			
ESE													3.6	3.6											
SE										6.7	10.0	3.3	3.6	3.6	3.3	10.0			3.3						3.3
SSE											10.0	10.0	3.6	6.9	3.3	3.3									
S									6.7	6.7	3.3	6.7	23.5	30.3	20.0	20.0	23.3	3.3							
SSW														3.6	3.3										
SW													6.9		3.3	3.3		6.7							
WSW													3.6				3.3								
W		3.3	3.3		3.3	3.3		6.7	10.0	6.7	3.3	13.3	3.6	6.9	3.3	6.7	10.0	3.3	3.3	3.3	3.3	6.7	3.3	6.7	3.3
WNW		3.3	3.3	3.3	6.7	6.7	3.3	13.3		6.7	3.3		3.6	3.6	6.7			6.7		6.7		3.3	3.3		
NW		16.7	16.7	10.0	13.3	10.0	23.3	13.3	6.7		13.3	3.3	3.6	3.6	6.7	13.3	16.7	23.3	10.0	20.0	6.7	20.0	13.3	16.7	13.3
NNW				6.7		3.3					3.3		3.6		3.3				6.7	6.7	10.0		3.3	6.7	3.3
CALM		70.0	70.0	73.3	73.3	63.3	70.0	60.0	66.7	63.3	46.7	50.0	33.6	26.6	36.7	33.3	43.3	46.7	55.7	63.3	73.3	60.0	70.0	63.3	70.0

* Note: Due to rounding, percentage totals do not equal 100%.

ALBROOK (Forest site) SEPTEMBER 1966

		Relative Frequencies* of Wind Directions by Hour at 4.0 m (%)																							
Hr.	Dir.	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	N																								
	NNE																								
	NE																								
	ENE																								
	E																	12.5							
	ESE																								
	SE								14.3	14.3	14.3			14.3											
	SSE															12.5									
	S											14.3													
	SSW																								
	SW																								
	WSW																								
	W																12.5								
	WNW																								
	NW																								
	NNW																								
	CALM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	55.7	85.7	85.7	100.0	85.7	100.0	87.5	100.0	87.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Note: Due to rounding, percentage totals do not equal 100%.

CHIVA CHIVA (Open site) SEPTEMBER 1960

		Relative Frequencies* of Wind Directions by Hour at 46.0 m (%)																							
Dir.	HR	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
N			6.7	10.0	3.3	10.0	16.7	6.7	6.7	16.7	3.3	6.7	6.7	6.7	3.3	6.7	13.3		16.7	16.7	13.3	16.7	13.3	10.0	
NNE		6.7	3.3		3.3	10.0		3.3				3.3	3.3			10.0	6.7	3.3	3.3	10.0	13.3	3.3	3.3		3.3
NNE		3.3	3.3	3.3		3.3		3.3	3.3		3.3		6.7	3.3	3.3	3.3	3.3	3.3	6.7			3.3	3.3	10.0	
ENE				3.3	3.3	3.3	6.7					3.3			3.3	3.3					3.3	3.3	3.3	6.7	3.3
E			3.3			6.7	3.3	10.0	10.0	3.3	3.3					3.3		3.3	10.0	6.7	3.3		10.0	3.3	
ESE				3.3	3.3	3.3	3.3			3.3			3.3	3.3	3.3			3.3	6.7	10.0	3.3	6.7	3.3		
ESE							3.3		3.3	3.3	3.3	10.0	13.3	13.3	3.3	3.3	13.3	10.0	3.3	6.7	3.3		3.3	3.3	3.3
SE										3.3	3.3	6.7	6.7	6.7	13.3	13.3	13.3		3.3						
SSE	3.3									3.3	3.3	6.7	6.7	6.7	13.3	13.3	13.3								3.3
S				3.3	3.3				6.7	13.3	26.7	20.0	30.0	30.0	40.0	26.7	6.7	16.7	10.0						
SSW					3.3			3.3								3.3	3.3				3.3			3.3	
SW	3.3				3.3				6.7	3.3	6.7	6.7			6.7	3.3	6.7	3.3	3.3			3.3			
WSW			3.3			3.3	3.3				3.3							3.3			6.7			3.3	3.3
W	6.7	10.0	23.3	13.3	3.3	10.0	13.3	3.3	10.0	6.7	16.7	6.7	6.7	3.3	3.3	3.3	3.3	3.3	6.7	3.3	6.7	13.3		10.0	3.3
WNW	10.0	16.7	10.0		10.0	6.7	6.7	6.7	16.7	10.0	6.7	3.3	10.0	16.7	6.7	6.7	13.3	13.3	16.7	10.0	10.0	13.3	16.0	13.3	3.3
NW	30.0	23.3	10.0	23.3	26.7	30.0	26.7	6.7	20.0	16.7	10.0	10.0	10.0	10.0	13.3	3.3	13.3	26.7	6.7	23.3	23.3	23.3	23.3	26.7	
NNW	20.0	23.3	16.7	16.7	13.3	6.7	6.7	20.0	5.7	3.3	3.3	0	3.3		3.3	6.7	3.3	6.7	23.3	13.3	6.7	10.0	16.7	6.7	16.7
CALM	16.7	6.7	20.0	16.7	13.3	16.7	10.0	16.7	16.7			3.3	3.3			5.3		3.3			3.3	13.3	10.0	10.0	13.3

* Note: Due to rounding, percentage totals do not equal 100%.

CHIVA CHIVA (Open site) SEPTEMBER 1966

Relative Frequencies* of Wind Directions by Hour at 4.0 m (%)																								
Hr. Dir.	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
N	6.7	6.7	6.7	10.0	6.7	3.3	10.0	6.7		10.0		3.3	3.3	6.7	13.3	13.3	3.3	6.7	6.7				3.6	3.6
NNE	3.3		3.3	6.7	10.0	6.7		3.3				3.3			3.3	3.3		6.7	10.0	6.7	3.3	10.0		10.3
NE	13.3	10.0	6.7		6.7	6.7	6.7	3.3			3.3	3.3	3.3	6.7	3.3			3.3	3.3			6.7	7.0	10.3
ENE				6.7	10.0	3.3	3.3				3.3		3.3				3.3					3.3		
E	3.3		6.7						6.7	6.7	3.3		3.3				6.7	20.0		3.3			7.0	
ESE					3.3		3.3	3.3	3.3					3.3	3.3	6.7	6.7		3.3			6.7		3.6
SE	3.3						3.3	6.7	3.3	3.3	10.0	16.7	13.3	6.7	13.3	16.7	3.3	6.7				3.3	3.6	3.3
SSF							3.3	3.3		6.7	6.7	13.3	6.7	10.0	6.7	6.7	3.3		3.3					
S	6.7	3.3		3.3		3.3	6.7	6.7	16.7	33.3	23.3	23.3	30.0	3.3	23.3	6.7	10.0	6.7	3.3					7.0
SSW			3.3											3.3	3.3	3.3	6.7	3.3						
SW		6.7	3.3							3.3	6.7	3.3				3.3	6.7	3.3	3.3		3.3			
WSW	3.3		3.3				6.7		3.3				3.3	6.7		10.0			3.3	6.7	3.3		10.4	
W	3.3	3.3	6.7	20.0	10.0	10.0	16.7	10.0	10.0	3.3	13.3	6.7	10.0	10.0	10.0	3.3	3.3	13.3	3.3	6.7	10.0	6.7	3.6	7.0
WNW			3.3	3.3		6.7	3.3	3.3	10.0	6.7	6.7	10.0	6.7	3.3	6.7	6.7	20.0	13.3	13.3	13.3	16.7	16.7	10.4	7.0
NW	30.0	26.7	10.0	13.3	16.7	20.0	3.3	10.0	23.3	20.0	16.7	10.0	6.7	6.7	3.3	13.3	20.0	10.0	6.7	10.0	10.0	3.3	10.4	10.3
NNW	3.3	6.7	6.7	10.0	3.3	3.3		10.0	6.7	3.3	6.7		6.7	3.3	10.0	3.3	6.7	3.3	16.7	10.0	3.3	10.0	7.0	13.6
CALM	23.3	33.3	40.0	30.0	26.7	36.7	33.3	30.0	20.0	3.3		6.7	3.3			3.3		3.3	23.3	26.7	50.0	33.3	37.0	23.6

* Note: Due to rounding, percentage totals do not equal 100%.

RIO HATO SEPTEMBER 1966

Relative Frequencies* of Wind Directions by Hour a. 4.0 m (%)																								
Hr. Dir.	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
N						5.5	5.5	12.0		5.8		11.9		5.5	16.8			5.0	5.0	10.6	5.2			
NNE			5.3	5.3	11.5			5.8	6.6				5.5	5.5			5.1				5.2			
NE																					5.2			
ENE																						5.2		
E																								
ESE										12.0	6.2	11.9	11.2		5.5	5.5								
SE									6.6	5.8	31.2	36.0	11.2		5.5	11.2								
SSE										18.0	12.5	5.8	22.3	28.4	16.8	16.8	10.5							
S										12.0	19.0	18.0	28.2	39.6	11.2	5.5	10.5							
SSW														5.5	11.2	11.2								
SW																								
WSW											6.2		11.2	5.5										
W							5.5	5.8		5.8	6.2			5.5		5.5								
WNW					5.3	11.5	5.5			5.8							5.0							
NW			5.0	5.3		5.5	11.2					5.8											5.1	
NNW					5.5				13.0		6.2		5.5					5.0	5.0	5.2			5.1	4.8
CALM	100.0	95.0	90.7	90.7	72.3	85.0	77.9	77.8	73.4	36.0	12.5	11.9	5.5	5.5	28.2	45.0	74.5	85.0	85.0	85.2	85.2	95.8	90.5	95.4

* Note: Due to rounding, percentage totals do not equal 100%.

SEPTEMBER 1966

Summary of Elements with Non-hourly Frequencies of Observation						
Site	Element, Units and Exposure	Description	Number of Obs.	Minimum Value	Mean or Total Value	Maximum Value
Albrook (Coast site)	WBG Index ¹ (at 1.5 meters)	Index value	420	69.3	77.2	82.1
		Dry bulb temp.	420	70.0	78.0	87.5
		Wet bulb temp.	420	69.0	76.7	81.0
		Black bulb temp.	420	70.0	78.7	88.5
	Evaporation ³ (in. at 3 levels)	Piche (46.0 m)	30	0.000	4.785*	0.433
		Piche (26.5 m)	30	0.000	3.381*	0.274
		Piche (0.5 m)	28	0.000	0.367*	0.043
	Precipitation from Raingauge Network ² (in. at 1.0 meters)	Gauge # 1	120	0.00	8.17*	1.76
		Gauge # 2	120	0.00	9.19*	1.72
		Gauge # 3	120	0.00	8.09*	1.62
		Gauge # 4	120	0.00	6.70*	1.11
		Gauge # 5	120	0.00	6.94*	1.28
		Gauge # 6	120	0.00	6.93*	0.95
		Gauge # 7	120	0.00	8.30*	1.44
		Gauge # 8	120	0.00	6.46*	1.09
	Stem Flow ² (in. at 2.0 meters)	Small tree	120	0.00	5.94*	1.25
		Medium tree	120	0.00	32.59*	15.42
		Large tree	120	0.00	173.22*	68.97
Chiva Chiva (Open site)	WBG Index ¹ (at 1.5 meters)	Index value	420	67.9	80.0	90.0
		Dry bulb temp.	420	68.0	80.8	98.0
		Wet bulb temp.	420	68.0	77.1	82.2
		Black bulb temp.	420	67.5	89.7	122.0
	Evaporation ³ (in. at 0.5 meters)	Piche	30	0.000	3.200*	0.207
		Pan	29	0.000	4.034*	0.299
Minimum Grass temp ³ (°F at grass tips)	None	30	69.0	72.0	75.0	
	Albrook **	Maximum temp. (°F at 1.5m)	23	78.0	83.5	87.0
		Minimum temp. (°F at 1.5m)	23	71.0	73.9	76.5
Maximum R. H. (% at 1.5m)		23	94.0	98.0	100.0	
Minimum R. H. (% at 1.5m)		23	62.0	84.0	100.0	
Precipitation ³ (in. at 1.0m)		In open area	25	0.00	7.41*	1.22
		Under canopy	25	0.00	7.29*	1.47
Ft. Kobbe **	Maximum temp. (°F at 1.5m)	22	78.0	82.3	85.0	
	Minimum temp. (°F at 1.5m)	22	72.0	73.7	75.0	
	Maximum R. H. (% at 1.5m)	22	85.0	97.0	100.0	
	Minimum R. H. (% at 1.5m)	22	65.0	83.0	8.0	
	Precipitation ³ (in. at 1.0m)	In open area	25	0.00	5.58*	1.20
		Under canopy	25	0.00	2.87*	0.62
Ft. Sherman **	Maximum temp. (°F at 1.5m)	26	76.5	80.7	84.0	
	Minimum temp. (°F at 1.5m)	26	70.5	74.2	76.0	
	Maximum R. H. (% at 1.5m)	26	98.0	99.0	100.0	
	Minimum R. H. (% at 1.5m)	26	70.0	88.0	99.0	
	Precipitation ³ (in. at 1.0m)	In open area	27	0.00	12.45*	1.74
		Under canopy	27	0.00	8.59*	1.46

- 1 - Hourly observations between 0600 and 1900 hours inclusive
 2 - Six hourly observations
 3 - Daily observations

* Total Values
 ** Satellite

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13. ABSTRACT This report contains detailed microclimatic data for September 1966 from specific sites in the Panama Canal Zone and vicinity. The data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-meter levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity, and evaporation.			

14. KEY WORDS	LINK A		LINK B		LINK C	
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